



#19

SEQUENCE LISTING

<110> Ryazanov, Alexey
<120> MAMMALIAN ALPHA-KINASE PROTEINS, NUCLEIC ACIDS AND DIAGNOSTIC AND
THERAPEUTIC USES THEREOF
<130> 601-1-098CIP
<140> 09/832,292
<141> 2001-04-10
<150> 09/632,131
<151> 2001-08-03
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<170> PatentIn version 3.1
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<213> Homo sapiens
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Lys Arg Tyr Ile Glu Pro Val Asn Arg Asp Val Tyr Phe Glu Asp Val
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Arg Leu Gln Met Glu Ala Lys Leu Trp Gly Asp Asp Tyr Asn Arg His
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Lys Pro Pro Lys Gln Val Asp Ile Met Gln Met Cys Ile Ile Glu Leu
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Lys Asp Arg Pro Gly Lys Pro Leu Phe His Leu Asp His Tyr Ile Asp
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Gly Lys Tyr Ile Lys Tyr Asn Ser Asn Ser Gly Phe Val Arg Asp Asp
115 120 125

Asn Ile Arg Leu Thr Pro Gln Ala Phe Ser His Phe Thr Phe Glu Arg
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Ser Gly His Gln Leu Ile Val Val Asp Ile Gln Gly Val Gly Asp Leu
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Tyr Thr Asp Pro Gln Ile His Thr Glu Thr Gly Thr Asp Phe Gly Asn
165 170 175

Gly Asn Leu Gly Val Arg Gly Met Ala Leu Phe Phe Tyr Ser His Ala
180 185 190

Cys Asn Arg Ile Cys Glu Ser Met Gly Leu Ala Pro Phe Asp Leu Ser
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Pro Arg Glu Arg Asp Ala Val Asn Gln Asn Thr Lys Leu Leu Gln Ser
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Tyr Ile Cys Gln Val Asp Arg Arg Val Leu Phe Asp Asp Val Arg Leu
50 55 60

Gln Met Asp Ala Lys Leu Trp Ala Glu Glu Tyr Asn Arg Tyr Asn Pro
65 70 75 80

Pro Lys Lys Ile Asp Ile Val Gln Met Cys Val Ile Glu Met Ile Asp
85 90 95

Val Lys Gly Ser Pro Leu Tyr His Leu Glu His Phe Ile Glu Gly Lys
100 105 110

Tyr Ile Lys Tyr Asn Ser Asn Ser Gly Phe Val Ser Asn Ala Ala Arg
115 120 125

Leu Thr Pro Gln Ala Phe Ser His Phe Thr Phe Glu Arg Ser Gly His
130 135 140

Gln Met Met Val Val Asp Ile Gln Gly Val Gly Asp Leu Tyr Thr Asp
145 150 155 160

Pro Gln Ile His Thr Val Val Gly Thr Asp Tyr Gly Asp Gly Asn Leu
 165 170 175

Gly Ile Arg Gly Met Ala Leu Phe Phe His Ser His Arg Cys Asn Asp
 180 185 190

Ile Cys Glu Thr Met Asp Leu Ser Asn Phe Glu Leu Ser Pro Pro Glu
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Ile Glu Ala Thr Glu Val Ala Met Glu Val Ala Ala Lys Gln Lys Lys
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Ser Cys Ile Val Pro Pro Thr Val Phe
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 <213> Dictyostelium discoideum
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Met Thr Gln Leu Lys Asn Gly Thr Lys Phe Val Leu Lys Leu Tyr Lys
 65 70 75 80

Lys Glu Ala Glu Gln Gln Ala Ser Arg Glu Leu Tyr Phe Glu Asp Val
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Lys Met Gln Met Val Cys Arg Asp Trp Gly Asn Lys Phe Asn Gln Lys
 100 105 110

Lys Pro Pro Lys Lys Ile Glu Phe Leu Met Ser Trp Val Val Glu Leu
 115 120 125

Ile Asp Arg Ser Pro Ser Ser Asn Gly Gln Pro Ile Leu Cys Ser Ile
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Glu Pro Leu Leu Val Gly Glu Phe Lys Lys Asn Asn Ser Asn Tyr Gly
145 150 155 160

Ala Val Leu Thr Asn Arg Ser Thr Pro Gln Ala Phe Ser His Phe Thr
165 170 175

Tyr Gly Leu Ser Asn Lys Gln Met Ile Val Val Asp Ile Gln Gly Val
180 185 190

Asp Asp Leu Tyr Thr Asp Pro Gln Ile His Thr Pro Asp Gly Lys Gly
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Phe Gly Leu Gly Asn Leu Gly Lys Ala Gly Ile Asn Lys Phe Ile Thr
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Thr His Lys Cys Asn Ala Val Cys Ala Leu Leu Asp Leu Asp Val Lys
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Thr Met Val

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Thr Pro Arg Pro Ser Tyr Phe Glu Asp Val Lys Met Gln Met Ile Ala
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Lys Lys Trp Ala Asp Lys Tyr Asn Ser Phe Lys Pro Pro Lys Lys Ile
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Glu Phe Leu Gln Ser Cys Val Leu Glu Phe Val Asp Arg Thr Ser Ser
85 90 95

Asp Leu Ile Cys Gly Ala Glu Pro Tyr Val Glu Gly Gln Tyr Arg Lys
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Tyr Asn Asn Asn Ser Gly Phe Val Ser Asn Asp Glu Arg Asn Thr Pro
115 120 125

Gln Ser Phe Ser His Phe Thr Tyr Glu His Ser Asn His Gln Leu Leu
130 135 140

Ile Ile Asp Ile Gln Gly Val Gly Asp His Tyr Thr Asp Pro Gln Ile
145 150 155 160

His Thr Tyr Asp Gly Val Gly Phe Gly Ile Gly Asn Leu Gly Gln Lys
165 170 175

Gly Phe Glu Lys Phe Leu Asp Thr His Lys Cys Asn Ala Ile Cys Gln
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Gly Thr Val Pro
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<213> Homo sapiens

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Val	Leu	Ile	Lys	Met	Ala	Ser	Gln	Pro	Phe	Gly	Arg	Gly	Ala	Met	Arg		
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Arg	Glu	Ser	Glu	Asn	Ser	Gly	Asp	Ser	Gly	Tyr	Pro	Ser	Glu	Lys	Arg
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Gly	Glu	Leu	Asp	Asp	Pro	Glu	Pro	Arg	Glu	His	Gly	His	Ser	Tyr	Ser
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Val	Cys	Val	Glu	Lys	Trp	Asn	Leu	Leu	Asn	Ser	Ser	Arg	Leu	His	Leu
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Pro	Arg	Ala	Ser	Ala	Val	Ala	Leu	Glu	Val	Gln	Arg	Leu	Asn	Ala	Leu
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Asp Leu Glu Lys Lys Ile Gly Lys Ser Ile Leu Gly Asp Val His Leu
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Ala Met Val Arg Tyr His Glu Gly Gly Arg Phe Cys Glu Lys Gly Glu
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Glu Trp Asp Gln Glu Ser Ala Val Phe His Leu Glu His Ala Ala Asn
545 550 555 560

Leu Gly Glu Leu Glu Ala Ile Val Gly Leu Gly Leu Met Tyr Ser Gln
565 570 575

Leu Pro His His Ile Leu Ala Asp Val Ser Leu Lys Glu Thr Glu Glu
580 585 590

Asn Lys Thr Lys Gly Phe Asp Tyr Leu Leu Lys Ala Ala Glu Ala Gly
595 600 605

Asp Arg Gln Ser Met Ile Leu Val Ala Arg Ala Phe Asp Ser Gly Gln
610 615 620

Asn Leu Ser Pro Asp Arg Cys Gln Asp Trp Leu Glu Ala Leu His Trp
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Tyr Asn Thr Ala Leu Glu Met Thr Asp Cys Asp Glu Gly Gly Glu Tyr
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Asp Gly Met Gln Asp Glu Arg Tyr Met Met Leu Ala Arg Glu Ala Glu
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Met Leu Phe Thr Gly Gly Tyr Gly Leu Glu Lys Asp Pro Gln Arg Ser
675 680 685

Gly Asp Leu Tyr Thr Gln Ala Ala Glu Ala Ala Met Glu Ala Met Lys
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Gly Arg Leu Ala Asn Gln Tyr Tyr Gln Lys Ala Glu Glu Ala Trp Ala
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Gln Met Glu Glu

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<212> DNA
<213> Mus musculus

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 <212> PRT
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Asp	Asp	Glu	Gly	Tyr	Phe	Ile	Cys	Pro	Ile	Thr	Asp	Asp	His	Met	Ser
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Asn	Gln	Asn	Val	Ser	Ser	Lys	Val	Gln	Ser	Tyr	Tyr	Ser	Asn	Leu	Thr
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Lys	Thr	Glu	Leu	Cys	Gly	Ser	Thr	Gly	Ser	Pro	Ala	Ser	Ser	Phe	His
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Phe	Lys	Glu	Ala	Trp	Lys	His	Ala	Ile	Glu	Lys	Ala	Lys	His	Met	Pro
				85					90					95	

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Thr	Arg	His	Arg	Tyr	Asn	Ala	Val	Thr	Gly	Glu	Trp	Leu	Lys	Asp	Glu
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Val	Leu	Ile	Lys	Met	Ala	Ser	Gln	Pro	Phe	Gly	Arg	Gly	Ala	Met	Arg
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Glu	Cys	Phe	Arg	Thr	Lys	Lys	Leu	Ser	Asn	Phe	Leu	His	Ala	Gln	Gln
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Trp Lys Gly Ala Ser Asn Tyr Val Ala Lys Arg Tyr Ile Glu Pro Val
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Asp Arg Ser Val Tyr Phe Glu Asp Val Gln Leu Gln Met Glu Ala Lys
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Leu Trp Gly Glu Asp Tyr Asn Arg His Lys Pro Pro Lys Gln Val Asp
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Ile Met Gln Met Cys Ile Ile Glu Leu Lys Asp Arg Pro Gly Gln Pro
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Leu Phe His Leu Glu His Tyr Ile Glu Gly Lys Tyr Ile Lys Tyr Asn
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Ser Asn Ser Gly Phe Val Arg Asp Asp Asn Ile Arg Leu Thr Pro Gln
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Ala Phe Ser His Phe Thr Phe Glu Arg Ser Gly His Gln Leu Ile Val
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Val Asp Ile Gln Gly Val Gly Asp Leu Tyr Thr Asp Pro Gln Ile His
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Thr Glu Lys Gly Thr Asp Phe Gly Asp Gly Asn Leu Gly Val Arg Gly
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Met Ala Leu Phe Phe Tyr Ser His Ala Cys Asn Arg Ile Cys Gln Ser
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Met Gly Leu Thr Pro Phe Asp Leu Ser Pro Arg Glu Gln Asp Ala Val
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Asn Gln Ser Thr Arg Leu Leu Gln Ser Ala Lys Thr Ile Leu Arg Gly
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Thr Glu Glu Lys Cys Gly Ser Pro Arg Ile Arg Thr Leu Ser Ser Ser
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Arg Pro Pro Leu Leu Leu Arg Leu Ser Glu Asn Ser Gly Asp Glu Asn
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Met Ser Asp Val Thr Phe Asp Ser Leu Pro Ser Ser Pro Ser Ser Ala
 385 390 395 400

Thr Pro His Ser Gln Lys Leu Asp His Leu His Trp Pro Val Phe Gly

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Ala	Met	Val	Arg	Tyr	His	Glu	Gly	Gly	Arg	Phe	Cys	Glu	Lys	Asp	Glu
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Glu	Trp	Asp	Arg	Glu	Ser	Ala	Ile	Phe	His	Leu	Glu	His	Ala	Ala	Asp
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Leu	Gly	Glu	Leu	Glu	Ala	Ile	Val	Gly	Leu	Gly	Leu	Met	Tyr	Ser	Gln
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Leu	Pro	His	His	Ile	Leu	Ala	Asp	Val	Ser	Leu	Lys	Glu	Thr	Glu	Glu
			580					585					590		
Asn	Lys	Thr	Lys	Gly	Phe	Asp	Tyr	Leu	Leu	Lys	Ala	Ala	Glu	Ala	Gly
		595					600					605			
Asp	Arg	His	Ser	Met	Ile	Leu	Val	Ala	Arg	Ala	Phe	Asp	Thr	Gly	Leu
	610					615					620				
Asn	Leu	Ser	Pro	Asp	Arg	Cys	Gln	Asp	Trp	Ser	Glu	Ala	Leu	His	Trp
625						630					635				640
Tyr	Asn	Thr	Ala	Leu	Glu	Thr	Thr	Asp	Cys	Thr	Glu	Gly	Gly	Glu	Tyr
				645					650					655	

Asp Gly Ile Gln Asp Glu Pro Gln Tyr Ala Leu Leu Ala Arg Glu Ala
660 665 670

Glu Met Leu Leu Thr Gly Gly Phe Gly Leu Asp Lys Asn Pro Gln Arg
675 680 685

Ser Gly Asp Leu Tyr Thr Gln Ala Ala Glu Ala Ala Met Glu Ala Met
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Lys Gly Arg Leu Ala Asn Gln Tyr Tyr Gly Lys Ala Glu Glu Ala Trp
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Ala Gln Met Glu Glu
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<211> 3465

<212> DNA

<213> Dictyostelium discoideum

<400> 9

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ccaaattttg tttcacgtca atgtccattc aaaaagtttg gatgtagtag ttttttagtt	180
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<210> 10
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 <212> PRT
 <213> Dictyostelium discoideum
 <400> 10

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Ile Asn Val Asn Ser Pro Gln Ser Val Pro Leu Ser Gly Thr Leu Gln
20 25 30

Ser Pro Leu Ile Thr Pro Asn Ser Pro Asn Phe Val Ser Arg Gln Cys
35 40 45

Pro Phe Lys Lys Phe Gly Cys Ser Ser Phe Leu Val Ser Lys Ala Glu
50 55 60

Phe Asp Asn His Leu Lys Asp Asp Ala Gln Phe His Leu Gln Leu Ala
65 70 75 80

Val Glu Lys Phe Asp His Gln Phe Asp Leu His Thr Gln Leu Met Ala
85 90 95

His Phe Thr Glu Gln Met Glu Asp Gln Leu Glu Lys Thr Met Lys Val
100 105 110

Val Arg Asn His Thr Asp Ser Leu Gly Gly Asn Val Gln Thr Lys Leu
115 120 125

Asp Glu Gly Ile Glu Lys Cys Met Ala Phe Ala Lys Lys Val Glu Gln
130 135 140

Gln	Gln	Gln	Gln	Leu	Ala	Lys	Arg	Leu	Ile	Thr	Gln	Gln	Ile	Gln	Glu	145	150	155	160
Lys	Lys	Ser	Thr	Ser	Ser	Pro	Leu	Val	Lys	Gly	Gly	Ile	Ser	Gly	Gly	165	170	175	
Gly	Gly	Ser	Gly	Gly	Asp	Asp	Ser	Phe	Asp	Gly	Ala	Asn	Ile	Ser	Ser	180	185	190	
Met	Ser	Thr	Ser	Lys	Gln	Glu	Leu	Gln	Gln	Glu	Leu	Gln	Ser	Leu	Ser	195	200	205	
Ile	Lys	Met	Lys	Lys	Glu	Leu	Thr	Glu	Leu	Ser	Asp	Glu	Leu	Ser	Gln	210	215	220	
Lys	Leu	Glu	Arg	Ser	Thr	Gly	Asn	Ile	Asp	Ile	Lys	Ile	Lys	Arg	Ile	225	230	235	240
Glu	Gly	Glu	Val	Asn	Glu	Lys	Ile	Asp	Lys	Arg	Gln	Leu	Val	Ser	Thr	245	250	255	
Ile	Asp	Asp	Ser	Ile	Gly	Lys	Lys	Thr	Asp	Ser	Ile	Gly	Tyr	Thr	Leu	260	265	270	
Glu	Ser	Ser	Ile	Ile	Lys	Lys	Val	Glu	Glu	Lys	Glu	Lys	Lys	Lys	Ser	275	280	285	
Glu	Gln	Asn	Gln	Leu	Leu	Phe	Asp	Ser	Lys	Ile	Glu	Ser	Leu	Lys	Asp	290	295	300	
Lys	Ile	Lys	Ile	Ile	Glu	Thr	Gln	Gln	Leu	Asp	Thr	Ser	Ser	Glu	Val	305	310	315	320
Arg	Lys	Leu	Lys	Leu	Glu	Ser	Thr	Ser	Ser	Glu	Asn	Leu	Met	Ala	Gly	325	330	335	
Leu	Asn	Gly	Thr	Ser	Gly	Arg	Pro	Ser	Ser	Ser	Ser	His	Phe	Ile	Pro	340	345	350	
Ser	Ser	Val	Ser	Ala	Ala	Ala	Asn	Asn	Ile	Asn	Lys	Asn	Glu	Ile	Met	355	360	365	
Glu	Glu	Val	Lys	Lys	Val	Glu	Glu	Lys	Leu	Gln	Lys	Lys	Ile	Arg	Glu	370	375	380	
Glu	Ile	Asp	Asn	Thr	Lys	Ala	Glu	Leu	Ser	Lys	Val	Glu	Arg	Ser	Val				

385		390		395		400
Lys Asp Asn Arg Ser Glu Leu Glu Gly Leu Glu Lys Asp Cys Lys Asn						
		405		410		415
Gln Phe Asp Lys Gln Asp Asn Lys Ile Lys Gln Val Glu Asp Asp Leu						
		420		425		430
Lys Lys Ser Asp Ser Leu Leu Leu Leu Met Gln Asn Asn Leu Lys Lys						
		435		440		445
Tyr Asn Glu Phe Val Asp Arg Glu Arg Asp Arg Glu Ser Glu Arg Leu						
		450		455		460
Lys Leu Gln Asp Ser Ile Lys Arg Leu Glu Gln Asn Gln Lys Lys Ile						
		465		470		475
Glu Ala Glu Ile Gln Glu Gly Asn Glu Gln Val Glu Arg Val Leu Arg						
		485		490		495
Glu Glu Ala Ser Ile Ser Pro Ile Ser Ser Val Pro Lys Ser Pro Ile						
		500		505		510
Thr Thr Lys Arg Ser Ser Ile Ile Leu Asn Ser Pro Pro Met Thr Ser						
		515		520		525
Gln Gln Ser Ser Pro Lys Ile Gln Asp Leu Leu Ser Ser Ser Gly Ser						
		530		535		540
Ser Ser Val Ser Gly Ile Asn Ile Ser Ser Glu Thr Gly Glu Met Gly						
		545		550		555
Ile Leu Trp Glu Phe Asp Pro Ile Ile Asn Lys Trp Ile Arg Leu Ser						
		565		570		575
Met Lys Leu Lys Val Glu Arg Lys Pro Phe Ala Glu Gly Ala Leu Arg						
		580		585		590
Glu Ala Tyr His Thr Val Ser Leu Gly Val Gly Thr Asp Glu Asn Tyr						
		595		600		605
Pro Leu Gly Thr Thr Thr Lys Leu Phe Pro Pro Ile Glu Met Ile Ser						
		610		615		620
Pro Ile Ser Lys Asn Asn Glu Ala Met Thr Gln Leu Lys Asn Gly Thr						
		625		630		635
						640

Lys	Phe	Val	Leu	Lys	Leu	Tyr	Lys	Lys	Glu	Ala	Glu	Gln	Gln	Ala	Ser	
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Arg	Glu	Leu	Tyr	Phe	Glu	Asp	Val	Lys	Met	Gln	Met	Val	Cys	Arg	Asp	
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Trp	Gly	Asn	Lys	Phe	Asn	Gln	Lys	Lys	Pro	Pro	Lys	Lys	Ile	Glu	Phe	
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Leu	Met	Ser	Trp	Val	Val	Glu	Leu	Ile	Asp	Arg	Ser	Pro	Ser	Ser	Asn	
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Gly	Gln	Pro	Ile	Leu	Cys	Ser	Ile	Glu	Pro	Leu	Leu	Val	Gly	Glu	Phe	
705					710					715					720	
Lys	Lys	Asn	Asn	Ser	Asn	Tyr	Gly	Ala	Val	Leu	Thr	Asn	Arg	Ser	Thr	
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Pro	Gln	Ala	Phe	Ser	His	Phe	Thr	Tyr	Glu	Leu	Ser	Asn	Lys	Gln	Met	
			740					745					750			
Ile	Val	Val	Asp	Ile	Gln	Gly	Val	Asp	Asp	Leu	Tyr	Thr	Asp	Pro	Gln	
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Ala	Gly	Ile	Asn	Lys	Phe	Ile	Thr	Thr	His	Lys	Cys	Asn	Ala	Val	Cys	
785					790					795					800	
Ala	Leu	Leu	Asp	Leu	Asp	Val	Lys	Leu	Gly	Gly	Val	Leu	Ser	Gly	Asn	
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			820					825					830			
Pro	Glu	Leu	Met	Pro	Ser	Asp	Asn	Thr	Ile	Lys	Val	Gly	Ala	Lys	Gln	
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	850					855					860					
Ile	Gln	Ser	Phe	Arg	Glu	Arg	Val	Asn	Ser	Ile	Ala	Phe	Phe	Asp	Asn	
865					870					875					880	

Gln Lys Leu Leu Cys Ala Gly Tyr Gly Asp Gly Thr Tyr Arg Val Phe
 885 890 895

Asp Val Asn Asp Asn Trp Lys Cys Leu Tyr Thr Val Asn Gly His Arg
 900 905 910

Lys Ser Ile Glu Ser Ile Ala Cys Asn Ser Asn Tyr Ile Phe Thr Ser
 915 920 925

Ser Pro Asp Asn Thr Ile Lys Val His Ile Ile Arg Ser Gly Asn Thr
 930 935 940

Lys Cys Ile Glu Thr Leu Val Gly His Thr Gly Glu Val Asn Cys Val
 945 950 955 960

Val Ala Asn Glu Lys Tyr Leu Phe Ser Cys Ser Tyr Asp Lys Thr Ile
 965 970 975

Lys Val Trp Asp Leu Ser Thr Phe Lys Glu Ile Lys Ser Phe Glu Gly
 980 985 990

Val His Thr Lys Tyr Ile Lys Thr Leu Ala Leu Ser Gly Arg Tyr Leu
 995 1000 1005

Phe Ser Gly Gly Asn Asp Gln Ile Ile Tyr Val Trp Asp Thr Glu
 1010 1015 1020

Thr Leu Ser Met Leu Phe Asn Met Gln Gly His Glu Asp Trp Val
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Leu Ser Leu His Cys Thr Ala Ser Tyr Leu Phe Ser Thr Ser Lys
 1040 1045 1050

Asp Asn Val Ile Lys Ile Trp Asp Leu Ser Asn Phe Ser Cys Ile
 1055 1060 1065

Asp Thr Leu Lys Gly His Trp Asn Ser Val Ser Ser Cys Val Val
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Lys Asp Arg Tyr Leu Tyr Ser Gly Ser Glu Asp Asn Ser Ile Lys
 1085 1090 1095

Val Trp Asp Leu Asp Thr Leu Glu Cys Val Tyr Thr Ile Pro Lys
 1100 1105 1110

Ser His Ser Leu Gly Val Lys Cys Leu Met Val Phe Asn Asn Gln

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Gln Ser Lys			
1145			

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 <400> 11

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 <400> 12

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Ser	Glu	Leu	Thr	Asn	Asp	Thr	Thr	Val	Ser	Ala	Ile	Arg	Lys	Ile	Leu
			20					25					30		

His	Glu	Gly	Lys	Ile	Phe	Arg	Phe	Pro	Tyr	Gly	Thr	Ser	Gln	Thr	Asp
		35					40					45			

Leu	Gln	Ile	Gly	Lys	Met	Leu	Pro	Ser	Gly	Ser	Gly	Gly	Gly	Ala	Thr
	50					55					60				

Ala	Asp	Ser	Lys	Phe	Glu	Lys	Phe	Lys	Ala	Arg	Asn	Thr	Leu	Ala	Asp
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Ile	Gln	Tyr	Lys	Val	Gly	Asp	Thr	Leu	Tyr	Val	Arg	Val	Lys	Lys	Ser
				85					90					95	

Lys Pro Thr Asn Asp Ser Leu Leu Pro Thr Leu Asn Ile Ala Phe Leu
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Asp Gly Ser Glu Arg Ala Ile Lys Trp Glu Tyr Asp Pro Tyr Thr Thr
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Thr Ala Gln Trp Thr Cys Thr Ala Thr Leu Val Lys Val Glu Pro Val
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Pro Phe Ala Glu Gln Ala Phe Arg Lys Ala Tyr His Thr Leu Asp Leu
 145 150 155 160

Ser Lys Ser Gly Ala Ser Gly Arg Tyr Val Ser Lys Ile Gly Lys Lys
 165 170 175

Pro Thr Pro Arg Pro Ser Tyr Phe Glu Asp Val Lys Met Gln Met Ile
 180 185 190

Ala Lys Lys Trp Ala Asp Lys Tyr Asn Ser Phe Lys Pro Pro Lys Lys
 195 200 205

Ile Glu Phe Leu Gln Ser Cys Val Leu Glu Phe Val Asp Arg Thr Ser
 210 215 220

Ser Asp Leu Ile Cys Gly Ala Glu Pro Tyr Val Glu Gly Gln Tyr Arg
 225 230 235 240

Lys Tyr Asn Asn Asn Ser Gly Phe Val Ser Asn Asp Glu Arg Asn Thr
 245 250 255

Pro Gln Ser Phe Ser His Phe Thr Tyr Glu His Ser Asn His Gln Leu
 260 265 270

Leu Ile Ile Asp Ile Gln Gly Val Gly Asp His Tyr Thr Asp Pro Gln
 275 280 285

Ile His Thr Tyr Asp Gly Val Gly Phe Gly Ile Gly Asn Leu Gly Gln
 290 295 300

Lys Gly Phe Glu Lys Phe Leu Asp Thr His Lys Cys Asn Ala Ile Cys
 305 310 315 320

Gln Tyr Leu Asn Leu Gln Ser Ile Asn Pro Lys Ser Glu Lys Ser Asp
 325 330 335

Cys Gly Thr Val Pro Arg Pro Asp Leu Ile Phe Pro Asp Thr Ser Glu

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Arg	Asp	Asn	Asn	Asn	Asn	Asn	Asn	Asn	Asn	Asn	Asn	Asn	Asn	Asn	Asn
		355					360					365			
Asn	Asn	Asn	Asn	Asn	Ser	Asn	Asn	Asn	Asn	Asn	Asn	Asn	Ser	Ser	Ile
	370					375					380				
Ser	Lys	Ser	Leu	Val	Glu	Ile	Ser	Ser	Gly	Ser	Lys	Glu	Arg	Asn	Asp
385					390					395					400
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Lys Leu Met Glu Thr Trp Arg Lys Ala Ala Arg Arg Ala Arg Thr Asn
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Tyr Ile Asp Pro Trp Lys Glu Phe Asn Ile His Glu Tyr Pro Val Gln
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Arg Ala Lys Arg Tyr Arg Tyr Ser Ala Ile Arg Lys Gln Trp Thr Glu
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 675 680 685

Gln Glu Glu Glu Leu Asp Ser Asp Cys Gly Lys Thr Thr Phe Ser Ser
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Tyr Lys Glu Gly Gly Tyr Gly Leu Asn Gln Asp Phe Glu Arg Ala Tyr
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Cys Leu Lys Leu Ala Val Ala Ala Lys His Arg Asp Phe Ile Ala His
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Pro Ala Ile Leu Leu Leu Glu Tyr Lys Thr Lys Ala Glu Met Ser His
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Ile Pro Gln Ser Gln Asp Ala His Gln Met Thr Met Asp Asp Ser Glu
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Tyr His Ala Pro Ile Val Lys Phe Trp Phe Asn Thr Leu Ala Tyr Leu
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Ala Ile Glu Lys Val Arg Glu Ile Phe Met Ser Glu Ala Gly Lys Val
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Tyr Asp Thr Lys Pro Glu Ile Ile Leu Gln Leu Leu Lys Glu Trp
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Val	Lys	Ala	Val	Ile	Ala	Cys	Ile	Leu	Tyr	Arg	Ala	Met	Ala	His	Glu	625	630	635	640
Ala	Lys	Glu	Ser	His	Met	Val	Asp	Asp	Ala	Ser	Glu	Glu	Leu	Lys	Asn	645	650	655	
Tyr	Ser	Lys	Gln	Phe	Gly	Gln	Leu	Ala	Leu	Asp	Leu	Leu	Glu	Lys	Ala	660	665	670	
Phe	Lys	Gln	Asn	Glu	Arg	Met	Ala	Met	Thr	Leu	Leu	Thr	Tyr	Glu	Leu	675	680	685	
Arg	Asn	Trp	Ser	Asn	Ser	Thr	Cys	Leu	Lys	Leu	Ala	Val	Ser	Gly	Gly	690	695	700	
Leu	Arg	Pro	Phe	Val	Ser	His	Thr	Cys	Thr	Gln	Met	Leu	Leu	Thr	Asp	705	710	715	720
Met	Trp	Met	Gly	Arg	Leu	Lys	Met	Arg	Lys	Asn	Ser	Trp	Leu	Lys	Ile	725	730	735	
Ile	Ile	Ser	Ile	Ile	Leu	Pro	Pro	Thr	Ile	Leu	Thr	Leu	Glu	Phe	Lys	740	745	750	
Ser	Lys	Ala	Glu	Met	Ser	His	Val	Pro	Gln	Ser	Gln	Asp	Phe	Gln	Phe	755	760	765	
Met	Trp	Tyr	Tyr	Ser	Asp	Gln	Asn	Ala	Ser	Ser	Ser	Lys	Glu	Ser	Ala	770	775	780	
Ser	Val	Lys	Glu	Tyr	Asp	Leu	Glu	Arg	Gly	His	Asp	Glu	Lys	Leu	Asp	785	790	795	800
Glu	Asn	Gln	His	Phe	Gly	Leu	Glu	Ser	Gly	His	Gln	His	Leu	Pro	Trp	805	810	815	
Thr	Arg	Lys	Val	Tyr	Glu	Phe	Tyr	Ser	Ala	Pro	Ile	Val	Lys	Phe	Trp	820	825	830	
Phe	Tyr	Thr	Met	Ala	Tyr	Leu	Ala	Phe	Leu	Met	Leu	Phe	Thr	Tyr	Thr	835	840	845	

Val Leu Val Glu Met Gln Pro Gln Pro Ser Val Gln Glu Trp Leu Val
850 855 860

Ser Ile Tyr Ile Phe Thr Asn Ala Ile Glu Val Val Arg Glu Val Ser
865 870 875 880

Ile Ser Glu Pro Gly Lys Phe Thr Gln Lys Val Lys Val Trp Ile Ser
885 890 895

Glu Tyr Trp Asn Leu Thr Glu Thr Val Ala Ile Gly Leu Phe Ser Ala
900 905 910

Gly Phe Val Leu Arg Trp Gly Asp Pro Pro Phe His Thr Ala Gly Arg
915 920 925

Leu Ile Tyr Cys Ile Asp Ile Ile Phe Trp Phe Ser Arg Leu Leu Asp
930 935 940

Phe Phe Ala Val Asn Gln His Ala Gly Pro Tyr Val Thr Met Ile Ala
945 950 955 960

Lys Met Thr Ala Asn Met Phe Tyr Ile Val Ile Ile Met Ala Ile Val
965 970 975

Leu Leu Ser Phe Gly Val Ala Arg Lys Ala Ile Leu Ser Pro Lys Glu
980 985 990

Pro Pro Ser Trp Ser Leu Ala Arg Asp Ile Val Phe Glu Pro Tyr Trp
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Met Ile Tyr Gly Glu Val Tyr Ala Gly Glu Ile Asp Val Cys Ser
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Gln Ala Val Tyr Leu Phe Val Gln Tyr Ile Ile Met Val Asn Leu
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Leu Ile Ala Phe Phe Asn Asn Val Tyr Leu Asp Met Glu Ser Ile
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Ser Asn Asn Leu Trp Lys Tyr Asn Arg Tyr Arg Tyr Ile Met Thr
1070 1075 1080

Tyr His Glu Lys Pro Trp Leu Pro Pro Pro Leu Ile Leu Leu Ser

1085	1090	1095
His Val Gly Leu Leu Leu Arg 1100 1105	Arg Leu Cys Cys	His Arg Ala Pro 1110
His Asp Gln Glu Glu Gly Asp 1115 1120	Val Gly Leu Lys	Leu Tyr Leu Ser 1125
Lys Glu Asp Leu Lys Lys Leu 1130 1135	His Asp Phe Glu	Glu Gln Cys Val 1140
Glu Lys Tyr Phe His Glu Lys 1145 1150	Met Glu Asp Val	Asn Cys Ser Cys 1155
Glu Glu Arg Ile Arg Val Thr 1160 1165	Ser Glu Arg Val	Thr Glu Met Tyr 1170
Phe Gln Leu Lys Glu Met Asn 1175 1180	Glu Lys Val Ser	Phe Ile Lys Asp 1185
Ser Leu Leu Ser Leu Asp Ser 1190 1195	Gln Val Gly His	Leu Gln Asp Leu 1200
Ser Ala Leu Thr Val Asp Thr 1205 1210	Leu Lys Val Leu	Ser Ala Val Asp 1215
Thr Leu Gln Glu Asp Glu Ala 1220 1225	Leu Leu Ala Lys	Arg Lys His Ser 1230
Thr Cys Lys Lys Leu Pro His 1235 1240	Ser Trp Ser Asn	Val Ile Cys Ala 1245
Glu Val Leu Gly Ser Met Glu 1250 1255	Ile Ala Gly Glu	Lys Lys Tyr Gln 1260
Tyr Tyr Ser Met Pro Ser Ser 1265 1270	Leu Leu Arg Ser	Leu Ala Gly Gly 1275
Arg His Pro Pro Arg Val Gln 1280 1285	Arg Gly Ala Leu	Leu Glu Ile Thr 1290
Asn Ser Lys Arg Glu Ala Thr 1295 1300	Asn Val Arg Asn	Asp Gln Glu Arg 1305
Gln Glu Thr Gln Ser Ser Ile 1310 1315	Val Val Ser Gly	Val Ser Pro Asn 1320

Arg	Gln	Ala	His	Ser	Lys	Tyr	Gly	Gln	Phe	Leu	Leu	Val	Pro	Ser
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Gln	Thr	Glu	Val	Leu	Val	His	Leu	Thr	Gly	Gln	Thr	Pro	Val	Val
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Ile	Ala	His	Leu	Leu	Asp	Gly	Gln	Asp	Lys	Ala	Glu	Gln	Val	Leu
1400						1405					1410			
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His	Lys	Glu	Glu	Lys	Leu	Met	Lys	Ile	Cys	Lys	Ile	Lys	Asn	Leu
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Ser Asp 1595	Gln Leu Asn Pro Glu 1600	Pro Gly Glu Asn Ser 1605	Ile Ser Glu
Glu Glu 1610	Tyr Ser Lys Asn Trp 1615	Phe Thr Val Ser Lys 1620	Phe Ser His
Thr Gly 1625	Val Glu Pro Tyr Ile 1630	His Gln Lys Met Lys 1635	Thr Lys Glu
Ile Gly 1640	Gln Cys Ala Ile Gln 1645	Ile Ser Asp Tyr Leu 1650	Lys Gln Ser
Gln Glu 1655	Asp Leu Ser Lys Asn 1660	Ser Leu Trp Asn Ser 1665	Arg Ser Thr
Asn Leu 1670	Asn Arg Asn Ser Leu 1675	Leu Lys Ser Ser Ile 1680	Gly Val Asp
Lys Ile 1685	Ser Ala Ser Leu Lys 1690	Ser Pro Gln Glu Pro 1695	His His His
Tyr Ser 1700	Ala Ile Glu Arg Asn 1705	Asn Leu Met Arg Leu 1710	Ser Gln Thr
Ile Pro 1715	Phe Thr Pro Val Gln 1720	Leu Phe Ala Gly Glu 1725	Glu Ile Thr
Val Tyr 1730	Arg Leu Glu Glu Ser 1735	Ser Pro Leu Asn Leu 1740	Asp Lys Ser
Met Ser 1745	Ser Trp Ser Gln Arg 1750	Gly Arg Ala Ala Met 1755	Ile Gln Val
Leu Ser 1760	Arg Glu Glu Met Asp 1765	Gly Gly Leu Arg Lys 1770	Ala Met Arg
Val Val	Ser Thr Trp Ser Glu	Asp Asp Ile Leu Lys	Pro Gly Gln

1775	1780	1785
Val Phe Ile Val Lys Ser Phe 1790 1795	Leu Pro Glu Val	Val Arg Thr Trp 1800
His Lys Ile Phe Gln Glu Ser 1805 1810	Thr Val Leu His	Leu Cys Leu Arg 1815
Glu Ile Gln Gln Gln Arg Ala 1820 1825	Ala Gln Lys Leu	Ile Tyr Thr Phe 1830
Asn Gln Val Lys Pro Gln Thr 1835 1840	Ile Pro Tyr Thr	Pro Arg Phe Leu 1845
Glu Val Phe Leu Ile Tyr Cys 1850 1855	His Ser Ala Asn	Gln Trp Leu Thr 1860
Ile Glu Lys Tyr Met Thr Gly 1865 1870	Glu Phe Arg Lys	Tyr Asn Asn Asn 1875
Asn Gly Asp Glu Ile Thr Pro 1880 1885	Thr Asn Thr Leu	Glu Glu Leu Met 1890
Leu Ala Phe Ser His Trp Thr 1895 1900	Tyr Glu Tyr Thr	Arg Gly Glu Leu 1905
Leu Val Leu Asp Leu Gln Gly 1910 1915	Val Gly Glu Asn	Leu Thr Asp Pro 1920
Ser Val Ile Lys Pro Glu Val 1925 1930	Lys Gln Ser Arg	Gly Met Val Phe 1935
Gly Pro Ala Asn Leu Gly Glu 1940 1945	Asp Ala Ile Arg	Asn Phe Ile Ala 1950
Lys His His Cys Asn Ser Cys 1955 1960	Cys Arg Lys Leu	Lys Leu Pro Asp 1965
Leu Lys Arg Asn Asp Tyr Ser 1970 1975	Pro Glu Arg Ile	Asn Ser Thr Phe 1980
Gly Leu Glu Ile Lys Ile Glu 1985 1990	Ser Ala Glu Glu	Pro Pro Ala Arg 1995
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1655

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<400> 33

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Glu Pro Tyr Ile Tyr Gln Lys Asn Lys Met Lys Glu Ile Lys Arg His
35 40 45

Thr Thr Gln Ala Ser Asp His Leu Arg Gln Pro Gln Glu Asn Arg Asp
50 55 60

Lys Thr Pro Ile Trp Asn Ser Gly Ser Thr Ser Leu Ser Arg Ser Phe
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Leu Thr Arg Ser Pro Asn Glu Val His Lys Ile Ser Thr Ser Leu Lys
85 90 95

Ser Pro Gln Glu Pro His His His Tyr Ser Ala Ile Glu Arg Asn Asn
100 105 110

Leu Met Arg Leu Ser Gln Thr Ile Pro Phe Thr Pro Ile Gln Leu Phe
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Thr Gly Glu Glu Val Thr Ile Tyr Lys Leu Glu Glu Ser Ser Pro Leu
130 135 140

Thr Leu Asp Lys Ser Met Ser Ser Trp Ser Gln His Gly Arg Ala Ala
145 150 155 160

Met Ile Gln Val Leu Ser Gln Glu Glu Met Asp Gly Gly Leu Arg Lys
165 170 175

Ala Met Arg Val Ile Ser Thr Trp Ser Glu Asp Asp Val Leu Lys Pro
180 185 190

Gly Gln Val Phe Ile Val Lys Ser Phe Leu Pro Glu Val Val Gln Thr
195 200 205

Trp Tyr Lys Ile Phe Gln Glu Ser Thr Val Leu His Leu Cys Leu Arg
210 215 220

Glu Ile Gln Gln Gln Arg Ala Ala Gln Lys Leu Ile Tyr Thr Phe Asn
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Gln Val Lys Pro Gln Thr Ile Pro Tyr Thr Pro Arg Phe Leu Glu Val
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Ser Leu Val Tyr Cys His Ser Ala Asn Gln Trp Leu Thr Ile Glu Lys
260 265 270

Tyr Met Thr Gly Glu Phe Arg Lys Tyr Asn Asn Asn Asn Gly Asp Glu
275 280 285

Ile Ala Pro Thr Asn Thr Leu Glu Glu Leu Met Leu Ala Phe Ser His
290 295 300

Trp Thr Tyr Glu Tyr Thr Arg Gly Glu Leu Leu Val Leu Asp Leu Gln
305 310 315 320

Gly Val Gly Glu Asn Leu Thr Asp Pro Lys Pro Glu Asp Lys Gln Ser
325 330 335

Arg Gly Met Val Phe Gly Pro Ala Asn Leu Gly Glu Asp Ala Ile Arg
340 345 350

Ser Phe Ile Ala Lys His Arg Cys Asn Ser Cys Cys Gly Lys Leu Arg
355 360 365

Leu Pro Asp Leu Lys Arg Asn Asp Tyr Ser Leu Ser Arg Thr His Cys
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His Ser Ser Leu Gly Val Asp Thr His Asn Ser Thr Gly Gln Ile His
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Val Ala Ser Val Ser Asn Leu Ser Glu Ile Asn Arg Glu Asn Leu Ser
1          5          10          15

```

```

Leu Ala Gln Tyr Pro Gly Leu Glu Ser Cys Pro Gln Ser Leu Gln Gln
          20          25          30

```

```

Glu Gly Arg Pro Asn Arg Asp Arg Asp Leu Pro Gly Ala Leu Trp Ala
          35          40          45

```

```

Glu Ser Ala Cys Glu Leu Ser Leu Leu Glu Asp Asn Glu Glu Glu Glu
50          55          60

```

```

Ser Gln Pro Pro Ala Ser Val Ala Leu Pro Gln Gly Asp Gly Val Pro
65          70          75          80

```

```

Cys Arg Glu Pro Glu Gly Leu Ser Asp Ser Phe Pro Gln Pro Thr Ala
          85          90          95

```

```

Pro Ser Leu Pro Leu Glu Asn Val Gly Ser Gly Ser Arg Val Arg Glu
100          105          110

```

```

Ala Ala Gly Gly Val Gly Cys Phe Glu Ala Gly Asp Gln Glu Thr Cys
115          120          125

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Tyr	Ala	Thr	Met	Asp	Leu	Leu	Val	Gly	Ala	Pro	Val	Asp	Lys	Tyr	Leu	130	135	140	
Pro	Gln	Glu	Ile	Cys	Pro	Glu	Asp	Leu	Glu	Leu	Thr	Glu	Gly	Gln	Ser	145	150	155	160
Glu	Val	Cys	Asp	Leu	Cys	Ser	Pro	Asp	Lys	Ile	Leu	Ala	Val	Leu	Gln	165	170	175	
Thr	Gln	Gly	Tyr	Glu	Pro	Pro	Arg	Ser	Thr	Asp	Lys	Arg	Ser	Gln	Asp	180	185	190	
Gly	Lys	Ser	Ala	Glu	Gly	Leu	Leu	Phe	Asn	Ser	Thr	Phe	Thr	Trp	Asp	195	200	205	
Thr	Ala	Lys	Glu	Ala	Ser	Glu	Asp	Ala	Val	Gly	Glu	Thr	Ala	Ala	Asp	210	215	220	
Val	Glu	Asn	Pro	Pro	Ser	Thr	Phe	Ser	Ser	Thr	Leu	Pro	Tyr	Ser	Glu	225	230	235	240
Arg	Gly	Phe	Gly	Glu	Thr	Gln	Pro	Leu	Cys	Ser	Glu	Thr	Ile	Ser	Phe	245	250	255	
Val	Lys	Asp	Ser	Glu	Gly	Ser	Tyr	Arg	Ser	Ser	Ser	Leu	Ser	Ile	Pro	260	265	270	
Ala	Ala	Ile	Asp	Thr	Leu	Ala	Ser	Tyr	Ser	Ser	Asp	Arg	Glu	Cys	Ser	275	280	285	
Lys	Glu	Gln	Ser	Ala	Glu	Ser	Thr	Ala	Asn	Val	Asp	Cys	His	Gln	Val	290	295	300	
Thr	Arg	Glu	Met	Glu	Gly	Ile	Ser	Thr	Asn	Ala	Ala	Glu	Val	His	Glu	305	310	315	320
Ile	Lys	Cys	His	Ser	Val	Ser	Val	Pro	Gln	Asp	Asn	Asp	Phe	Asp	Val	325	330	335	
Gly	Ala	Asp	Gln	Val	Ser	Cys	Glu	Ala	Arg	Asp	Glu	Asp	Asn	Ser	Gln	340	345	350	
Ser	Leu	Pro	Asp	Asp	Asp	Ser	Gln	Ser	Gly	Arg	Ser	Leu	Ser	Ser	Ser	355	360	365	

Thr Gly Glu Ala Thr Gly Glu Thr Leu Val Pro Ala Pro Ser Ser Ala
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Gly Asp His Gly His Phe Ser Met Pro Glu Gly Gln Gly Leu Cys Ser
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Arg Ala Leu Gln Met Asp Asn Gln Pro Val Cys Gln Ser Gln Ala Met
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Glu Gly Ala His Ser Arg Gly Leu Glu Glu His Phe Gln Glu Lys Gly
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Ser Gly Met Lys His Gly Ile Arg Pro Gln Ser Thr Ser His Gln Val
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Ser Leu Ser Ala Asn Asp Phe Gln Glu Ile Leu Pro Ser Ile Pro Thr
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Met Gln Gln Glu Thr Asn Val Glu Pro Leu Glu His Ser Leu Ala Asp
 465 470 475 480

Ser Arg Glu Glu Ile Glu Cys Ser Ser Asp Pro Arg Thr Ser Asp Leu
 485 490 495

Val Val Ala Glu Lys Thr Val Gly Glu Asp Ser His Leu Val Val Ser
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Val Pro Ala Leu Pro Asp Ile Leu Leu Gly Glu Lys Asp Asp Val Gly
 515 520 525

Leu Gly Ser Trp Ala Val Gly Gly Lys Val Lys Ile Ile Thr Leu Glu
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Ala Pro Val Phe Glu Ile Trp Pro Pro Glu Leu Val Arg His Pro Gly
 545 550 555 560

Tyr Lys Glu Ala Glu Ala Gly Leu Thr Met Pro Gly Arg Ser Trp Ala
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Leu Ser Asp Ile Leu Arg Ala Gly Ala Thr Arg Ser Glu Pro Gly Ala
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Leu Gly Gly Ala Ala Trp Val Pro Ser Pro Gln Ala Asp Ala Leu Met
 595 600 605

Ala Leu Gly Ala Asn Arg Asp Thr Trp Leu Gly Ala Ala Pro Asp Arg

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Asn Ser Thr Gly His Ile Tyr Gly Gly Ser Glu Pro Arg Thr Arg Gln
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Ser Val Ile Pro Met Lys Thr Glu Lys Gly Thr Ile Glu Ser Lys Cys
 885 890 895

Gly Asn His Val Arg Ser Ser Asp Asp Leu Thr Asn Thr Pro Cys Thr
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Ser Ser Pro Lys Gly Asn Val Thr Arg Leu Ser Ile Ser His Gly Leu
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Glu Glu Leu Lys Ser Glu Lys Leu Gln Ile Ala Glu Thr Lys Pro Leu
 930 935 940

Asn Ser Ser Asp Ser Pro Thr Met Thr Leu Ala Leu Ile Ser Gly Glu
 945 950 955 960

Cys Glu Ser Glu Lys Asp Pro Lys Ser Leu Leu Arg Arg Asp Pro Cys
 965 970 975

Pro Lys Gly Ser Thr Leu Asp Ser Gly Lys Lys Ser Arg Asp Gln Gln
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Gln Lys Pro Val Ala Ala Gln Val Ser Lys Ala Pro Gly Asp Gln Ser
 995 1000 1005

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Arg Val Val Ala Leu Arg Leu Arg Leu Glu Glu Lys Glu Asn Ser
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Arg Lys Asn Ser Ile Val Lys Lys Thr Pro Lys Phe Glu Arg Ser
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Leu Ser Arg Thr Asp Glu Lys Arg Asp Pro Lys Arg Ala Pro Cys
 1070 1075 1080

Lys Ala Glu Gly Lys Ala Pro Val Leu Leu Lys Arg Ile Gln Ala
 1085 1090 1095

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Phe Leu Arg Arg Asp Ser Glu 1355	Ala Gly Gln Lys Cys 1360	Cys Thr Phe 1365
Gln His Trp Val Tyr Gln Lys 1370	Thr Ser Gly Cys Leu 1375	Leu Val Thr 1380
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Pro Arg Pro Pro Gly Pro Leu Gln Thr Arg Arg Tyr Cys Arg His Gln
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Gly Arg Gln Gly Ser Gly Leu Gly Ala Gly Pro Gly Ala Gly Thr Trp
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Arg Pro Gly Glu Gly Gln Gln Gln Val Thr Thr Ala Arg Pro Pro Ala
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Arg Gly Pro Gly Ala Gly Ala Trp Arg Thr Gly Glu Ala Ala Ala Ser
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Ala Gly Pro Ala Val Gly Glu Gly Gly Ala Met Gly Ser Arg Arg Ala
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Pro Thr Arg Gly Trp Gly Ala Gly Gly Arg Ser Gly Ala Gly Gly Asp
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Thr Pro Gln Pro Thr Arg Pro Phe Asn Arg Lys Arg Phe Ala Pro Pro
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Lys Pro Lys Gly Glu Ala Thr Thr Asp Ser Lys Pro Ile Ser Ser Leu
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Ser Gln Ala Pro Glu Cys Gly Ala Gln Ser Leu Gly Lys Ala Pro Pro

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785					790					795					800
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Gln	Arg	Thr	Arg	Ala	Asp	Arg	Lys	Thr	Gln	Val	Asp	Ala	Gly	Thr	Gln
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Lys	Ile	Gln	Glu	Asp	Arg	Lys	Ala	Gln	Ala	Asp	Lys	Gly	Thr	Gln	Glu
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 965 970 975

Ser Glu Glu Ala Val Val Thr Ala Ser Arg Asn His Glu Gln Thr Val
 980 985 990

Leu Gly Pro Leu Ser Gly Asn Leu Met Leu Pro Ala Gln Pro Pro His
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Glu Gly Ser Val Glu Gln Val Gly Gly Glu Arg Cys Arg Gly Pro
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Gln Ser Ser Gly Pro Val Glu Ala Lys Gln Glu Asp Ser Pro Phe
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Gln Cys Pro Lys Glu Glu Arg Pro Gly Gly Val Pro Cys Met Asp
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Gly Pro Cys Ser Thr Pro Thr Ser Gln His Gly Ser Thr Ala Thr
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Phe Leu Pro Ser Glu Asp Gln Val Leu Met Ser Ser Ala Pro Thr
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Thr Met Ala Thr Ser Ser Glu Gly Ala Cys Ala Gln Val Pro Asp
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Leu Ser 1235	Pro Cys Thr Ser	Arg 1240	Arg Leu Thr Gly Leu 1245	Leu Asp Arg
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Trp Gly 1265	Pro Gly Pro Ser	Ser 1270	Leu Thr Val Pro Ala 1275	Ile Val Val
Asp Glu 1280	Glu Asp Pro Gly	Leu 1285	Ala Ser Glu Gly Ala 1290	Ser Glu Gly
Glu Gly 1295	Glu Val Ser Leu	Glu 1300	Gly Pro Gly Leu Leu 1305	Gly Ala Ser
Gln Glu 1310	Ser Ser Met Ala	Gly 1315	Arg Leu Gly Glu Ala 1320	Gly Gly Gln
Ala Ala 1325	Pro Gly Gln Gly	Pro 1330	Ser Ala Glu Ser Ile 1335	Ala Gln Glu
Pro Ser 1340	Gln Glu Glu Lys	Phe 1345	Pro Gly Glu Ala Leu 1350	Thr Gly Leu
Pro Ala 1355	Ala Thr Pro Glu	Glu 1360	Leu Ala Leu Gly Ala 1365	Arg Arg Lys
Arg Phe 1370	Leu Pro Lys Val	Arg 1375	Ala Ala Gly Asp Gly 1380	Glu Ala Thr
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Pro Lys 1445	Ala Gly Gly Leu	Asp 1450	Thr Glu Val Ala	Leu Asp Glu Gly 1455
Lys Gln 1460	Glu Thr Leu Ala	Lys 1465	Pro Arg Lys Ala	Lys Asp Leu Leu 1470
Lys Ala 1475	Pro Gln Val Ile	Arg 1480	Lys Ile Arg Val	Glu Gln Phe Pro 1485
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Leu Ser 1505	Asp Ser Val Leu	Thr 1510	Trp Ala Lys Asp	Gln Arg Pro Val 1515
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Ala Ile 1535	Val Gln Ala Ser	Pro 1540	Val Asp Cys Gly	Val Tyr Arg Cys 1545
Thr Ile 1550	His Asn Glu His	Gly 1555	Ser Ala Ser Thr	Asp Phe Cys Leu 1560
Ser Pro 1565	Glu Val Leu Ser	Gly 1570	Phe Ile Ser Arg	Glu Glu Gly Glu 1575
Val Gly 1580	Glu Glu Ile Glu	Met 1585	Thr Pro Met Val	Phe Ala Lys Gly 1590
Leu Ala 1595	Asp Ser Gly Cys	Trp 1600	Gly Asp Lys Leu	Phe Gly Arg Leu 1605
Val Ser 1610	Glu Glu Leu Arg	Gly 1615	Gly Gly Tyr Gly	Cys Gly Leu Arg 1620
Lys Ala 1625	Ser Gln Ala Lys	Val 1630	Ile Tyr Gly Leu	Glu Pro Ile Phe 1635
Glu Ser 1640	Gly Arg Thr Cys	Ile 1645	Ile Lys Val Ser	Ser Leu Leu Val 1650

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1745						1750					1755			
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1775						1780					1785			
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1790						1795					1800			
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Ala Ser Ile Leu Ala Arg Asp Cys Ala Ala Ala Ala Ala Ile Val Phe
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 115 120 125

Gln Val Ala Lys Gly Leu His Lys Leu Gln Pro Ala Thr Pro Ile Ala
 130 135 140

Pro Gln Val Val Ile Arg Gln Ala Arg Ile Ser Val Asn Ser Gly Lys
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Ala	Thr	Gly	Thr	Trp	Leu	Tyr	Arg	Asn	Glu	Ser	Asp	Lys	Val	Leu	Val	180	185	190
Gln	Ser	Val	Cys	Ile	Gln	Ile	Arg	Gly	Gln	Ile	Leu	Gln	Lys	Leu	Gly	195	200	205
Met	Trp	Tyr	Glu	Ala	Ala	Glu	Leu	Ile	Trp	Ala	Ser	Ile	Val	Gly	Tyr	210	215	220
Leu	Ala	Leu	Pro	Gln	Pro	Asp	Lys	Lys	Gly	Leu	Ser	Thr	Ser	Leu	Gly	225	230	235
Ile	Leu	Ala	Asp	Ile	Phe	Val	Ser	Met	Ser	Lys	Asn	Asp	Tyr	Glu	Lys	245	250	255
Phe	Lys	Asn	Asn	Pro	Gln	Ile	Asn	Leu	Ser	Leu	Leu	Lys	Glu	Phe	Asp	260	265	270
His	His	Leu	Leu	Ser	Ala	Ala	Glu	Ala	Cys	Lys	Leu	Ala	Ala	Ala	Phe	275	280	285
Ser	Ala	Tyr	Thr	Pro	Leu	Phe	Val	Leu	Thr	Ala	Val	Asn	Ile	Arg	Gly	290	295	300
Thr	Cys	Leu	Leu	Ser	Tyr	Ser	Ser	Ser	Asn	Asp	Cys	Pro	Pro	Glu	Leu	305	310	315
Lys	Asn	Leu	His	Leu	Cys	Glu	Ala	Lys	Glu	Ala	Phe	Glu	Ile	Gly	Leu	325	330	335
Leu	Thr	Lys	Arg	Asp	Asp	Glu	Pro	Val	Thr	Gly	Lys	Gln	Glu	Leu	His	340	345	350
Ser	Phe	Val	Lys	Ala	Ala	Phe	Gly	Leu	Thr	Thr	Val	His	Arg	Arg	Leu	355	360	365
His	Gly	Glu	Thr	Gly	Thr	Val	His	Ala	Ala	Ser	Gln	Leu	Cys	Lys	Glu	370	375	380
Ala	Met	Gly	Lys	Leu	Tyr	Asn	Phe	Ser	Thr	Ser	Ser	Arg	Ser	Gln	Asp	385	390	395
																		400

Arg	Glu	Ala	Leu	Ser	Gln	Glu	Val	Met	Ser	Val	Ile	Ala	Gln	Val	Lys
				405					410					415	
Glu	His	Leu	Gln	Val	Gln	Ser	Phe	Ser	Asn	Val	Asp	Asp	Arg	Ser	Tyr
			420					425					430		
Val	Pro	Glu	Ser	Phe	Glu	Cys	Arg	Leu	Asp	Lys	Leu	Ile	Leu	His	Gly
		435					440					445			
Gln	Gly	Asp	Phe	Gln	Lys	Ile	Leu	Asp	Thr	Tyr	Ser	Gln	His	His	Thr
	450					455					460				
Ser	Val	Cys	Glu	Val	Phe	Glu	Ser	Asp	Cys	Gly	Asn	Asn	Lys	Asn	Glu
465					470					475					480
Gln	Lys	Asp	Ala	Lys	Thr	Gly	Val	Cys	Ile	Thr	Ala	Leu	Lys	Thr	Glu
				485					490					495	
Ile	Lys	Asn	Ile	Asp	Thr	Val	Ser	Thr	Thr	Gln	Glu	Lys	Pro	His	Cys
			500					505					510		
Gln	Arg	Asp	Thr	Gly	Ile	Ser	Ser	Ser	Leu	Met	Gly	Lys	Asn	Val	Gln
		515					520					525			
Arg	Glu	Leu	Arg	Arg	Gly	Gly	Arg	Arg	Asn	Trp	Thr	His	Ser	Asp	Ala
	530					535					540				
Phe	Arg	Val	Ser	Leu	Asp	Gln	Asp	Val	Glu	Thr	Glu	Thr	Glu	Pro	Ser
545					550					555					560
Asp	Tyr	Ser	Asn	Gly	Glu	Gly	Ala	Val	Phe	Asn	Lys	Ser	Leu	Ser	Gly
				565					570					575	
Ser	Gln	Thr	Ser	Ser	Ala	Trp	Ser	Asn	Leu	Ser	Gly	Phe	Ser	Ser	Ser
			580					585					590		
Ala	Ser	Trp	Glu	Glu	Val	Asn	Tyr	His	Val	Asp	Asp	Arg	Ser	Ala	Arg
		595					600					605			
Lys	Glu	Pro	Gly	Lys	Glu	His	Leu	Val	Asp	Thr	Gln	Cys	Ser	Thr	Ala
	610					615					620				
Leu	Ser	Glu	Glu	Leu	Glu	Asn	Asp	Arg	Glu	Gly	Arg	Ala	Met	His	Ser
625					630					635					640
Leu	His	Ser	Gln	Leu	His	Asp	Leu	Ser	Leu	Gln	Glu	Pro	Asn	Asn	Asp

645								650				655			
Asn	Leu	Glu	Pro	Ser	Gln	Asn	Gln	Pro	Gln	Gln	Gln	Met	Pro	Leu	Thr
			660					665					670		
Pro	Phe	Ser	Pro	His	Asn	Thr	Pro	Gly	Ile	Phe	Leu	Ala	Pro	Gly	Ala
		675					680					685			
Gly	Leu	Leu	Glu	Gly	Ala	Pro	Glu	Gly	Ile	Gln	Glu	Val	Arg	Asn	Met
	690					695					700				
Gly	Pro	Arg	Asn	Thr	Ser	Ala	His	Ser	Arg	Pro	Ser	Tyr	Arg	Ser	Ala
705					710					715					720
Ser	Trp	Ser	Ser	Asp	Ser	Gly	Arg	Pro	Lys	Asn	Met	Gly	Thr	His	Pro
				725					730					735	
Ser	Val	Gln	Lys	Glu	Glu	Ala	Phe	Glu	Ile	Ile	Val	Glu	Phe	Pro	Glu
			740					745					750		
Thr	Asn	Cys	Asp	Val	Lys	Asp	Arg	Gln	Gly	Lys	Glu	Gln	Gly	Glu	Glu
		755					760					765			
Ile	Ser	Glu	Arg	Gly	Ala	Gly	Pro	Thr	Phe	Lys	Ala	Ser	Pro	Ser	Trp
	770					775					780				
Val	Asp	Pro	Glu	Gly	Glu	Thr	Ala	Glu	Ser	Thr	Glu	Asp	Ala	Pro	Leu
785					790					795					800
Asp	Phe	His	Arg	Val	Leu	His	Asn	Ser	Leu	Gly	Asn	Ile	Ser	Met	Leu
				805					810					815	
Pro	Cys	Ser	Ser	Phe	Thr	Pro	Asn	Trp	Pro	Val	Gln	Asn	Pro	Asp	Ser
			820					825					830		
Arg	Lys	Ser	Gly	Gly	Pro	Val	Ala	Glu	Gln	Gly	Ile	Asp	Pro	Asp	Ala
		835					840					845			
Ser	Thr	Val	Asp	Glu	Glu	Gly	Gln	Leu	Leu	Asp	Ser	Met	Asp	Val	Pro
	850					855					860				
Cys	Thr	Asn	Gly	His	Gly	Ser	His	Arg	Leu	Cys	Ile	Leu	Arg	Gln	Pro
865					870					875					880
Pro	Gly	Gln	Arg	Ala	Glu	Thr	Pro	Asn	Ser	Ser	Val	Ser	Gly	Asn	Ile
				885					890					895	

Leu Phe Pro Val Leu Ser Glu Asp Cys Thr Thr Thr Glu Glu Gly Asn
900 905 910

Gln Pro Gly Asn Met Leu Asn Cys Ser Gln Asn Ser Ser Ser Ser Ser
915 920 925

Val Trp Trp Leu Lys Ser Pro Ala Phe Ser Ser Gly Ser Ser Glu Gly
930 935 940

Asp Ser Pro Trp Ser Tyr Leu Asn Ser Ser Gly Ser Ser Trp Val Ser
945 950 955 960

Leu Pro Gly Lys Met Arg Lys Glu Ile Leu Glu Ala Arg Thr Leu Gln
965 970 975

Pro Asp Asp Phe Glu Lys Leu Leu Ala Gly Val Arg His Asp Trp Leu
980 985 990

Phe Gln Arg Leu Glu Asn Thr Gly Val Phe Lys Pro Ser Gln Leu His
995 1000 1005

Arg Ala His Ser Ala Leu Leu Leu Lys Tyr Ser Lys Lys Ser Glu
1010 1015 1020

Leu Trp Thr Ala Gln Glu Thr Ile Val Tyr Leu Gly Asp Tyr Leu
1025 1030 1035

Thr Val Lys Lys Lys Gly Arg Gln Arg Asn Ala Phe Trp Val His
1040 1045 1050

His Leu His Gln Glu Glu Ile Leu Gly Arg Tyr Val Gly Lys Asp
1055 1060 1065

Tyr Lys Glu Gln Lys Gly Leu Trp His His Phe Thr Asp Val Glu
1070 1075 1080

Arg Gln Met Thr Ala Gln His Tyr Val Thr Glu Phe Asn Lys Arg
1085 1090 1095

Leu Tyr Glu Gln Asn Ile Pro Thr Gln Ile Phe Tyr Ile Pro Ser
1100 1105 1110

Thr Ile Leu Leu Ile Leu Glu Asp Lys Thr Ile Lys Gly Cys Ile
1115 1120 1125

Ser Val Glu Pro Tyr Ile Leu Gly Glu Phe Val Lys Leu Ser Asn
1130 1135 1140

Asn Thr Lys Val Val Lys Thr Glu Tyr Lys Ala Thr Glu Tyr Gly
1145 1150 1155

Leu Ala Tyr Gly His Phe Ser Tyr Glu Phe Ser Asn His Arg Asp
1160 1165 1170

Val Val Val Asp Leu Gln Gly Trp Val Thr Gly Asn Gly Lys Gly
1175 1180 1185

Leu Ile Tyr Leu Thr Asp Pro Gln Ile His Ser Val Asp Gln Lys
1190 1195 1200

Val Phe Thr Thr Asn Phe Gly Lys Arg Gly Ile Phe Tyr Phe Phe
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Leu Thr Arg Pro Ser Met Glu Lys Pro
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